

Mr. Michael T. Davis

Algebra 2 - Delta & Eta

Exponents Day 7: Multiplying & Dividing Radical Expressions

Name: Mr. Davis Solution Key

Date: \_\_\_\_\_

Multiply. Simplify if possible.

$$(\sqrt{2})(\sqrt{8})$$

$$\sqrt{16}$$
$$4$$

$$(\sqrt[3]{-5})(\sqrt[3]{25}) = \sqrt[3]{-125} = -5$$

$$(\sqrt{-2})(\sqrt{8})$$

Not possible in the  
real # system

$$(\sqrt[3]{3})(\sqrt[3]{-9}) = \sqrt[3]{-27} = -3$$

$$\sqrt[4]{4} \cdot \sqrt[4]{-4}$$

Not possible in the  
real # system

$$\sqrt{8} \cdot \sqrt{32} = \sqrt{8 \cdot 32} = \sqrt{256} = 16$$

$$\sqrt[3]{4} \cdot \sqrt[3]{16}$$

$$\sqrt[3]{64}$$
$$4$$

$$\sqrt{5} \cdot \sqrt{-5}$$

Not possible in the  
real # system

# Algebra 2

## Exponents Day 7: Multiplying & Dividing Radical Expressions

Simplify the following radical expressions.

$$\begin{aligned}\sqrt{72x^3} &= \sqrt{36 \cdot 2x^2 \cdot x} \\ &= 6|x|\sqrt{2x}\end{aligned}$$

$$\begin{aligned}\sqrt[3]{80x^5} &= \sqrt[3]{8 \cdot 10x^3 \cdot x^2} \\ &= 2x\sqrt[3]{10x^2}\end{aligned}$$

$$\begin{aligned}\sqrt{50x^4} &= \sqrt{25 \cdot 2x^4} \\ &= 5x^2\sqrt{2}\end{aligned}$$

$$\begin{aligned}\sqrt[3]{18x^4} &= \sqrt[3]{18x^3x} \\ &= x\sqrt[3]{18x}\end{aligned}$$

$$\begin{aligned}\sqrt{20x^3} &= \sqrt{4 \cdot 5x^2 \cdot x} \\ &= 2|x|\sqrt{5x}\end{aligned}$$

$$\begin{aligned}\sqrt[3]{81x^2} &= \sqrt[3]{27 \cdot 3x^2} \\ &= 3\sqrt[3]{3x^2}\end{aligned}$$

$$\begin{aligned}\sqrt{50x^5} &= \sqrt{25 \cdot 2x^4 \cdot x} \\ &= 5x^2\sqrt{2x}\end{aligned}$$

$$\begin{aligned}\sqrt[3]{32a^5} &= \sqrt[3]{8 \cdot 4 \cdot a^3 \cdot a^2} \\ &= 2a\sqrt[3]{4a^2}\end{aligned}$$

$$\begin{aligned}\sqrt[3]{54y^{10}} &= \sqrt[3]{27 \cdot 2y^9 \cdot y} \\ &= 3y^3\sqrt[3]{2y}\end{aligned}$$

$$\begin{aligned}\sqrt{200a^6b^7} &= \sqrt{100 \cdot 2a^6 \cdot b^6 \cdot b} \\ &= 10a^3b^3\sqrt{2b}\end{aligned}$$

$$\begin{aligned}\sqrt[3]{-250x^6y^5} &= -\sqrt[3]{125 \cdot 2x^6 \cdot y^3 \cdot y^2} \\ &= -5x^2y\sqrt[3]{2y^2}\end{aligned}$$

2.

$$\begin{aligned}\sqrt[4]{64x^3y^6} &= \sqrt[4]{16 \cdot 4x^3y^4 \cdot y^2} \\ &= 2|y|\sqrt[4]{4x^3y^2}\end{aligned}$$